FURUNO

OPERATOR'S MANUAL

VIDEO PLOTTER

MODEL RP-25

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⚠ SAFETY INSTRUCTIONS

⚠ CAUTION

No one navigational aid should be relied exclusively for the safety of vessel and crew. The navigator has the responsibility to check all aids available to confirm position. Electronic aids are not a substitute for basic navigational principles and common sense.

- **Digital charts cannot replace official nautical charts.**

  Digital charts are intended as an aid to navigation. Position should always be checked against nautical charts, as well as other aids to navigation.

- **Digital charts cannot replace the radar.**

  Digital charts can only show own ship's position relative to a chart feature (coastline, lighthouse, etc.); they cannot show other vessels, as does the radar. Digital charts can never replace the radar.

- **Handle chart/memory cards carefully.**

  The chart and memory cards are weak against heat and magnetic material.
  - Keep cards away from heat source.
  - Keep cards away from magnets and magnetic material.
  - Replace cards in their protective cases after use.

FORWORD

A Word to RP-25 Owners

Congratulations on your choice of the FURUNO RP-25 Video Plotter. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

For over 50 years FURUNO Electric Company has enjoyed an enviable reputation for innovative and dependable marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

Your RP-25 is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless installed function unless installed, operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.

We would appreciate hearing from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

Features

The Video Plotter RP-25 is an optional circuit board which is accommodated in the display unit of the FR/FAR-2805 series radars, and provides video plotter functions such as waypoint making and route creation.

The main features are

◆ Radar map function

- Displays/hides the user-made map by one-touch simple operation.
- 1,500 of marks/lines maximum are storable.

◆ Radar Plotter function

- Chart overlay on radar display
- Target track is displayed on head-up mode.
- Memory card can be used together with chart card.
- Radar position correction
- Arrival alarm function

The RP-25 function may be changed depending on your FR/FAR-2805 series radar specification. Refer to the following table to recognize your RP-25 working.

Your 2805 spec.	**Radar map**	**Video plotter**
R (Regular) type	Yes	Yes
IMO type (German, Netherland)	No	-

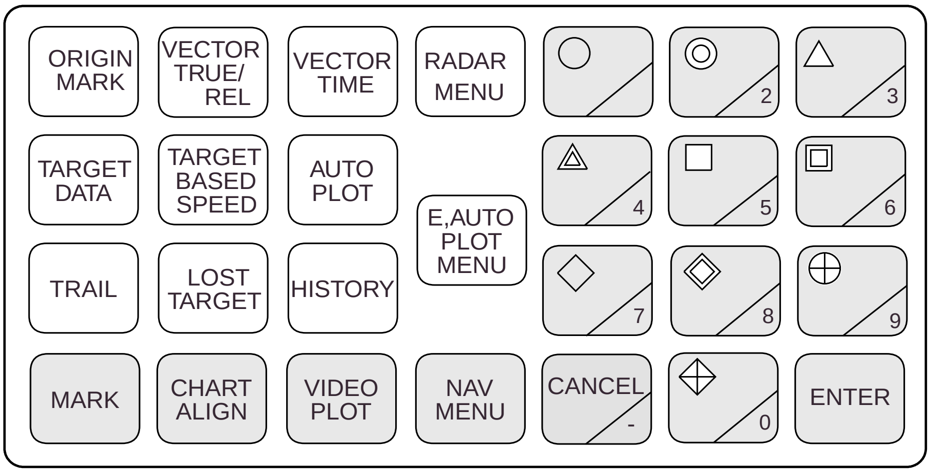
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1. RADAR MAP

A radar map is a combination map lines and symbols whereby the user can define and input the navigation data, route planning and monitoring data.
The radar map has the capacity of 1,500 points of mark and line. The map data can be memorized to facilitate the repeated use on the routine navigation area.
The user can create a radar map on-real time while using the radar for navigation or at leisure time at anchor or while the radar is not being used. Place of a map can be made for any waterways apart from the actual own ship location.

Note: Own ship position display requires an input from radionavigational equipment such as a GPS receiver in accordance with the format as defined by IEC 61162-1.

Keys for radar map



Key panel (right side)

1.1 Preparation

For R-type radar, confirm that the radar display appears. When the video plotter or radar/video plotter display appears, press the [VIDEO PLOT] key several times to select the radar display.

1. Press the [NAV MENU] key to show NAV INFORMATION 1 menu.
2. Press [1] key to show RADAR MAP menu.

```
        [RADAR MAP]
1       [NAV INFORMATION 1]
2       MAP
        OFF/ON
3       NAV DATA POSN
4       ALIGN + CURSOR
        OFF/ON
5       MARK ENTRY MODE
        CURSOR/L/L/OWN SHIP
6       ERASE MARK
        OFF/AREA/ALL

MEMORY IN USE
MARK = 1000
```

Number of current used mark/line
(Max. 1500 points)

Radar map menu

3. Press [2] key several times to set MAP ON, and then press the ENTER key.
   "MAP" appears at the right side of screen.
4. Press [NAV MENU] key to close the menu.

1.2 Making a Radar Map

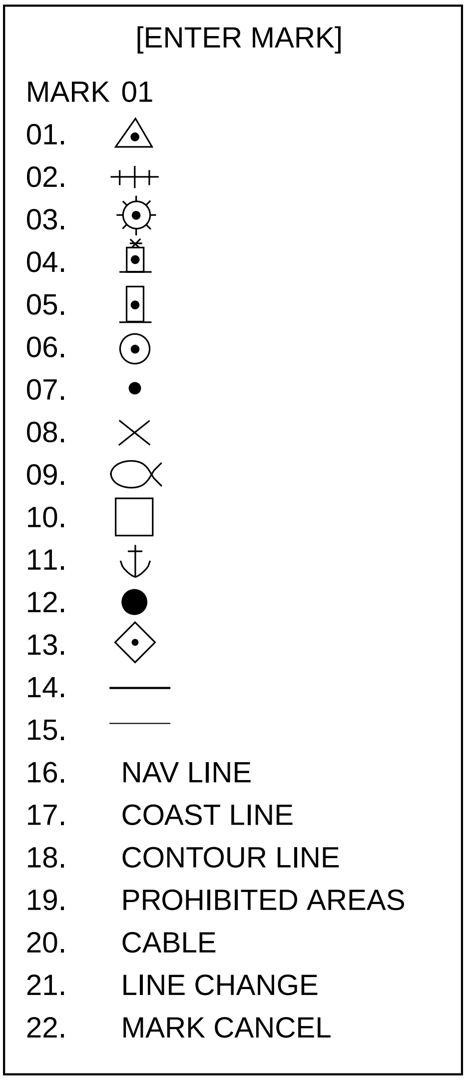
Marks/lines can be entered in three different ways.

1.2.1 Selecting the entering way

1. Press the [NAV MENU], [1] in that order to show RADAR MAP menu.
2. Press the [5] key several times to select CURSOR, L/L or OWN SHIP POSN.
   CURSOR: Enters mark/line at the position selected by cursor
   L/L: Enter mark/line at the position selected by L/L values
   OWN SHIP POSN: Enter mark/line at the current own ship's position
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

CURSOR

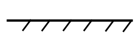
1. Press the [MARK] key to show ENTER MARK menu.



Enter mark menu

2. Press the numeric key to select the number for desired mark.
   For example, press the [1] [2] key in order when you want to select "●".
3. Operate the trackball to move the cursor to the desired position.
4. Press the [ENTER] key. The selected mark is entered at the selected position.
5. Repeat step 2 through 4. When using the same mark, repeat step3 and 4.
6. Press the [MARK] key to close the menu.

When entering the line, follow the steps in below.
1. Press the [MARK] key to show ENTER MARK menu.
2. Press the numeric key to select the desired line.
   No.14 through 20 are for line, the following table shows the shapes of No.16 through 20.

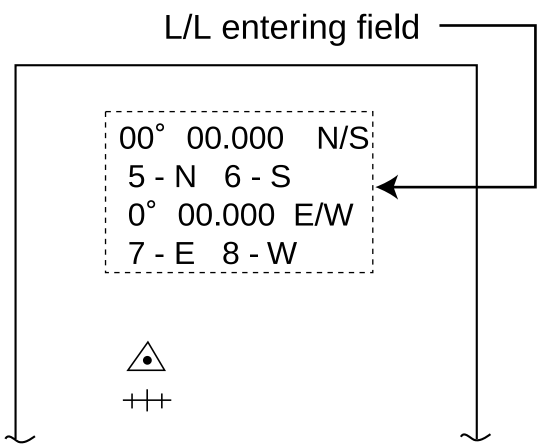
No./name	16 NAV LINE	17 COAST LINE	18 CONTOUR LINE	19 PROHIBITED AREAS	20 CABLE
Shape	....	White line			

Shapes for lines

3. Operate the trackball to the position you want to enter the line.
4. Press the [ENTER] key.
   Repeat step 3 and 4 to extend the same line. To change the line shapes, repeat step 2 through 4.
5. Press the [2] [1] [ENTER] in order to finish the entering line.

L/L (Longitude/Latitude)

1. Press the [MARK] key.
   When L/L is selected at RADAR MAP MENU, the L/L entering field appears above the ENTER MARK menu.



ENTER MARK menu (on selecting L/L)

2. Press the numeric keys to enter the value for the desired latitude.
   When you enter “45°67.888”, for example, press [4] [5] [6] [7] [8] [8] [8] in that order.
3. Press the [ENTER] key.
4. Press the [5] or [6] key to select North or South.
   [5] key: North, [6] key: South
5. Press the [ENTER] key.
6. Press the numeric key to enter the value for the desired longitude.
   When you enter “123°45.666”, for example, press [1] [2] [3] [4] [5] [6] [6] [6] in that order.
7. Press the [ENTER] key.
8. Press the [7] or [8] key to select East or West.
   [7] key: East, [8] key: West
9. Press the [ENTER] key.
10. Press the numeric key to select the desired mark.
11. Press the [ENTER] key to enter the mark at he position selected at step 2 and 9.

OWN SHIP POSN (POSITON)

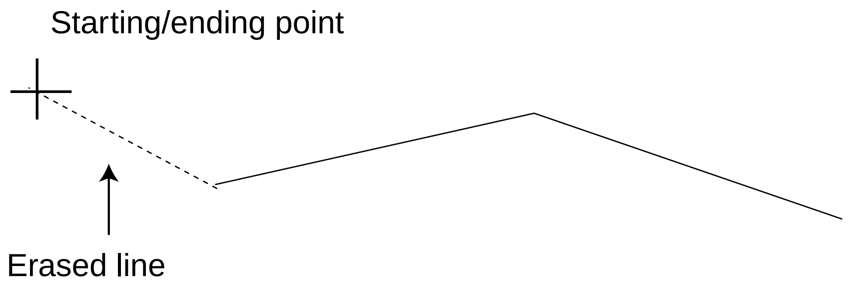
1. Press the [MARK] key.
2. Press the numeric key to select the desired mark.
3. Press the [ENTER] key.
   The mark is entered at the own ship’s position anytime you press this key.

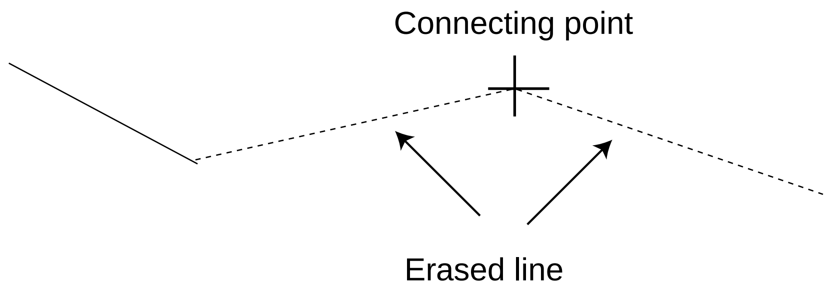
1.3 Erasing Contents of the Radar Map

1.3.1 Erasing the mark/line independently

1. Select CURSOR at MARK ENTRY MODE field on RADAR MAP menu.
2. Press the [MARK] key to show the ENTER MARK menu.
3. Press the [2] key twice to select MARK CANCEL.
4. Operate the trackball to move the cursor to the mark you want to erase.
5. Press the [ENTER] key.

   When erasing the line, move the cursor to the starting/ending point. Selecting the connecting point erases both lines connected to it.





1.3.2 Erasing all mark/line

You can erase all marks/lines displayed on the current screen, all marks/lines entered before now.

1. Press the [NAV MENU] [1] key in order to show the RADAR MAP menu.
2. Press the [6] key several times to select AREA or ALL.

   AREA: Erases all marks/lines within a square which is 20% larger than the effective radar display.

   ALL: Erases all marks/lines which you have been entered.
3. Press the [ENTER] key.

Memorizing the mark/line

Marks/lines are stored by using the battery on the RP Board. When the battery is low, the stored marks/lines are erased. After changing the battery, reenter the marks/lines.

1.4 Position and bearing correction

1.4.1 Radar map correction

When there is an error between the radar screen and marks/lines, do the following procedures.

1. Press the [CHART ALIGN] key.
   "MAN ALIGN" appears at the right side of screen.
2. Operate the trackball to align the radar screen and radar map.
3. Press the [CHART ALIGN] key again.
   The screen is fixed, and " MAN ALINED" appears instead of "MAN ALIGN".

1.4.2 Cursor data correction

The above correction value can be added to the cursor position's L/L data.

1. Press the [NAV MENU] [1] key in order to show the RADAR MAP menu.
2. Press the [4] key twice to select ON at ALIGN CURSOR field.
   When deleting the correcting value from the cursor data, select OFF.
3. Press the [NAV MENU] key to close the menu.

1.4.3 Releasing the radar map correction

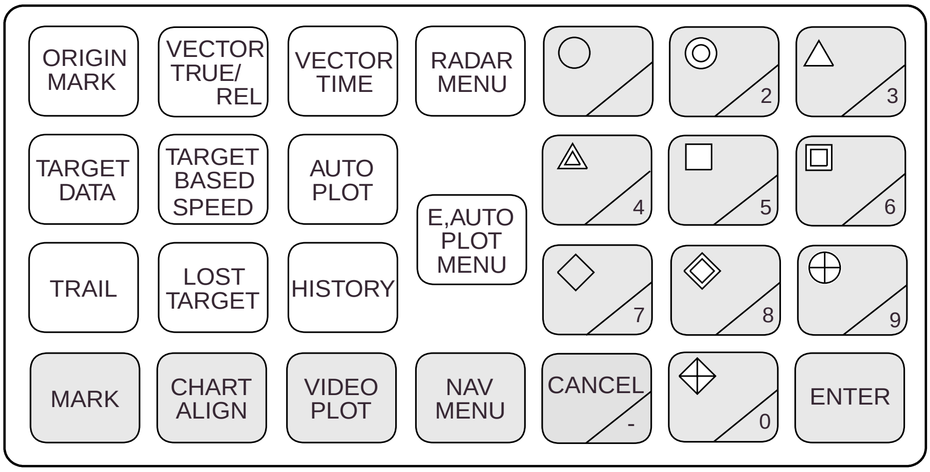
1. Press the [NAV MENU] [1] key in order to show the RADAR MAP menu.
2. Pres the [3] key to select NAV DATA POSN.
3. Press the [ENTER] key.
   The correction is released and "MAN ALINED" disappears.
4. Press the [NAV MENU] key to close the menu.

2. VIDEO PLOTTER

2.1 Overview

If your 2805 radar is for R (Regular) type, the video plotter function is available in addition to he radar map's.

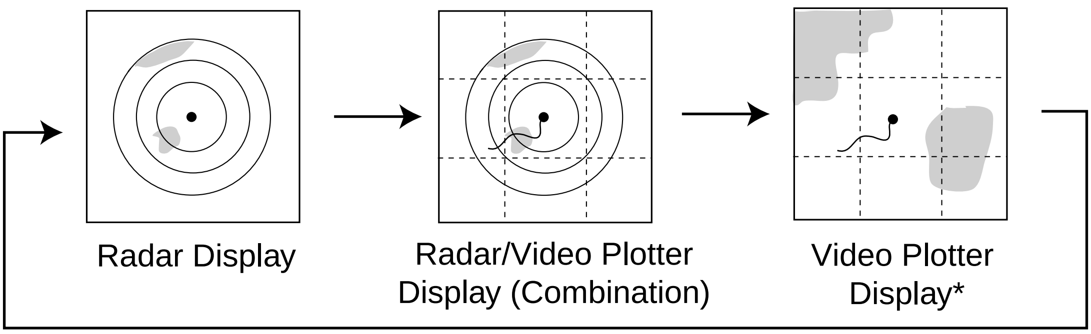
Keys for video plotter



Control panel (right)

2.1.1 Selecting Displays

The RP-25 has three displays: Radar, Video Plotter and Radar/Video Plotter (Combination). Displays are selected by pressing the [VIDEO PLOT] key, the keying sequence of which is shown in the figure below.



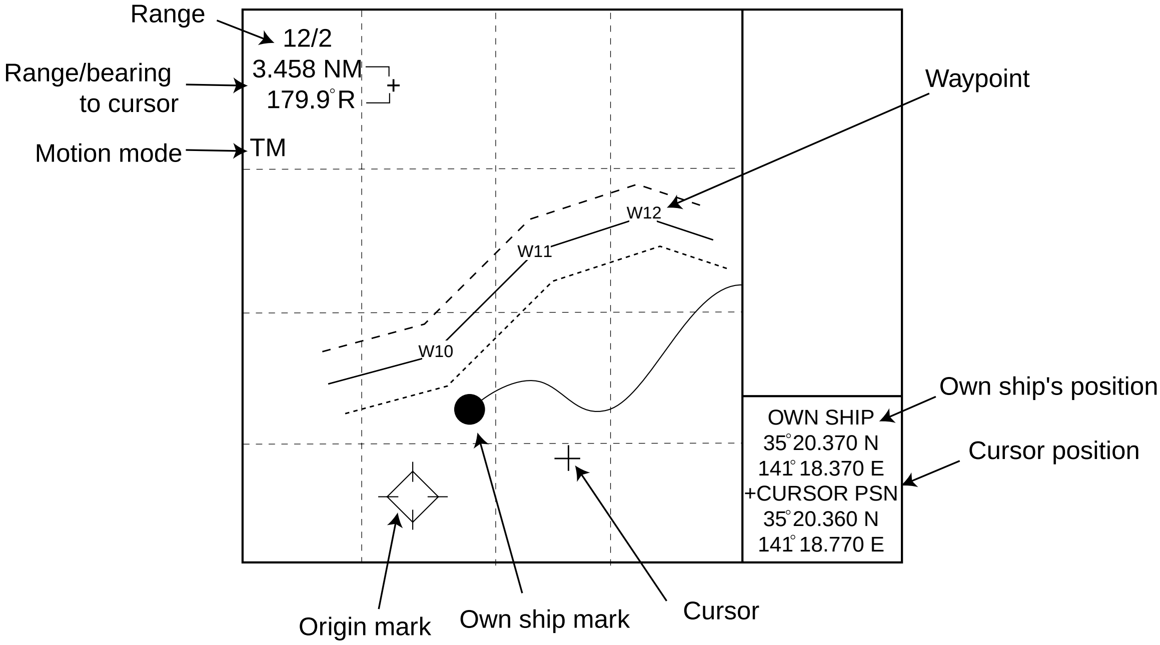
*Exclusive of Deep Sea specification

Displays

Note 1: When a menu appears, displays cannot be selected. I n this case, press the [NAV MENU] key to close the menu.

Note 2: Video Plotter function is not available when "MAP" appears at the right side of screen. Press the [VIDEO PLOT] key to select Radar/Video Plotter or Video Plotter display ("MAP" disappears).

Sample video plotter display



Note: Grid line is not appeared on G-type.

2.1.2 Display modes

The RP-25 has five presentation modes.

- NORTH UP
- COURSE UP
- HEAD UP
- HEAD UP TB
- NORTH UP
- NORTH UP TM

Press the [MODE] key to select the mode.

Note 1: On HEAD UP and HEAD UP TB mode, the chart data is not appeared though target tracks.

Note 2: On HEAD UP and HEAD UP TB mode, the screen may be seemed flashing because these mode changes the screen when the gyro data has 1° variation.

True motion automatic return

On the radar/video plotter display and the true motion mode, the own ship mark returns to the center of the screen when own ship reaches at the threes quarter position of the selected range.

2.2 Chart Cards

⚠ WARNING

Chart cards are intended as an aid to navigation. The navigation has the responsivility to check all aids available to confirm position.

⚠ CAUTION

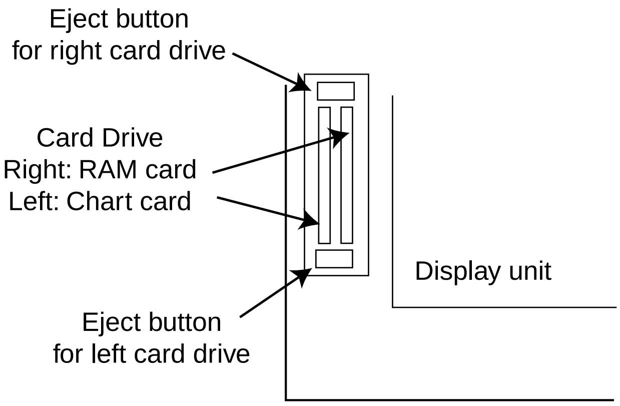
Handle chart cards and memory cards with care.

- Keep cards away from direct sunlight, heat sources, and active gases.
- Keep cards away from water and chemicals.
- Keep the connector free foreign material.
- Do not drop the cards.

2.2.1 Displaying chart cards

To display a chart;

1. Insert chart card in left side slot of the two chart card drive.



Card slot location

2. Press the [POWER] button to turn the power on.
   The chart data appears (NU, CU, TM modes only).

When a chart card is inserted after turning the power on, press the [RANGE +/-] key to change the range. The chart data appears.

2.2.2 Chart position correction

There may be instances when the radar image is not overland on the chart correctly. This is mainly due to position error inherent in the navigation aid connected to the radar. You can align chart with the radar image as follows.

Note: There is no alteration between own sip's data value and it displayed on the navigator though the chart position is corrected.

1. Press the [CHART ALIGN] key.
   "MAN ALIGN" appears at right side of the screen.
2. Operate the trackball to align the chart data and radar echoes.
3. Press the [CHART ALIGN] key to fix the screen.
   "MAN ALIGN" changes to "MAN ALIGNED".

2.2.3 Canceling chart correction

1. Press the [NAV MENU], [0] key in order to show VIDEO PROT 2 menu.

	[VIDEO PLOTTER 2]
1	[VIDEO PLOTTER 1]
2	NAV DATA POSN
3	ALIGN + CURSOR OFF/ON
5	MARK ENTRY MODE CURSOR/L/L/OWN SHIP

Video plotter 2 menu

2. Press the [2] key.
   NAV DATA POSN is in reverse video.
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

2.2.4 Adding correcting value to cursor data

On correcting the chart position, the value can be added to the cursor position data.

1. Press the [NAV MENU], [0] key to show the VIDEO PLOTTER 2 menu.
2. Press the [3] key several times to select OFF or ON at ALIGN + CURSOR field.
   OFF: Not added correction value to the cursor data
   ON: Added correction value to the cursor data
3. Press the [ENTER] key.
4. Press the [NAV MENU] hey to close the menu.

2.3 Setting up the Video Plotter

2.3.1 Hiding/showing graphics

1. Press the [NAV MENU], [8] key in order to show DISPLAY SELECT menu.

```
         [DISPLAY SELECT]
1        [VIDEO PLOTTER 1]
2        SYMBOL
         OFF/ON
3        COAST LINE
         OFF/ON
4        LAND DENSITY
         OFF/ON
5        PLACE NAME
         OFF/ON
6        MARK
         OFF/ON
7        OWN SHIP PLOT
         OFF/ON
8        TARGET PLOT
         OFF/ON
9        CONTOUR LINE
         OFF/ON
0        GRID
         OFF/ON
```

Display select menu

The current settings are in reverse video (default setting: all item is ON.) ON/OFF setting is described on chapter 3 “Initial settings”.

2. Pres the numeric key of which the item you want to show (hide) twice to select ON (OFF).
3. Press the [ENTER] key.
4. Repeat step 2 and 3 for other items.
5. Press the [NAV MENU] key to close the menu.

Note: TARGET PLOT is not available when your radar does not have ARPA function.

2.3.2 Setting the navigation data

The navigation data displayed around the video plotter screen can be set as follows.

1. Press the [NAV MENU], [1] key in order to show NAV INFORMATION 1 menu.

	[NAV INFORMATION 1]
1	[VIDEO PLOTTER 1]
2	SELECT NAVAID GPS+LC/ DEAD RECKONING
3	OWN SHIP POSN OFF/L/L
4	POSN 00°00.000 N/S 000°00.000 E/W
5	+ CURSOR DATA OFF/L/L
6	WPT DATA OFF/REL/TRUE
7	[WAY POINT]
8	[NAV LINE]
9	WIND DATA OFF/ON
0	[NAV INFORMATION 2]

Nav information 1 menu

2. For item 2, 3, 5, 6 and 9, press the appropriate numeric key several times to select the setting, and then press the [ENTER] key.
3. For item 4 POSN, do the following procedures.
   a) Press the [4] key.
   b) Press the numeric key to enter the value of latitude for own ship's position.
   c) Press the [ENTER] key.
   d) Press the [4] key to select North or South.
   e) Press the [ENTER] key.
   f) Press the numeric key to enter the value of longitude for own ship's position.
   g) Press the [ENTER] key.
   h) Press the [4] key to select East or West.
   i) Press the [ENTER] key.

   At the SELECT NAVAID (item 2) field;
   Connecting with the external navigator: Select GPS+LC.
   Not connected with the external navigator: Select DEAD RECKONING. Enter the L/L data referring to the step a) through i) in above.

4. Press the [0] key to show NAV INFORMATION 2 menu.

	[NAV INFORMATION 2]
1	[NAV INFORMATION 1]
2	WIND GRAPH
	OFF/ON
3	WIND UNIT
	M/S/KT
4	CURRENT DATA
	OFF/ON
5	CURRENT GRAPH
	OFF/ON
6	DEPTH DATA
	OFF/ON
7	DEPTH GRAPH
	OFF/ON
8	DEPTH SCALE
	10/20/50/100/200/500
9	DEPTH UNIT
	M/FT/FA
0	[NAV INFORMATION 3]

Nav information 2 menu

5. Do the setting for each items similar to the NAV INFORMATION 1 menu.
6. Press the [0] key to show NAV INFORMATION 3 menu.

	[NAV INFORMATION 3]
1	[NAV INFORMATION 2]
2	WATER TEMP
	OFF/ON
3	DATE
	OFF/UTC/LOCAL
	+00:00
4	USED WPL
	NAV LINE/WP

Nav information 3 menu

7. Press the [3] key several times to select OFF, UTC or LOCAL at the DATE (item 3) field.
8. Press the [ENTER] key.

   On selecting LOCAL, press the numeric key to enter the Coordinated Universal Time. For example, 15 minutes forward:

   a) Press the [3] key to select +.
   b) Press the [ENTER] key.
   c) Press the [0] [0] [1] [5] in order.
   d) Press the [ENTER] key.
9. Press the [NAV MENU] key.

2.4 Track

2.4.1 Recording the own ship's track

Own ship's track can be stored in the memory (Max. 6,000 points). When a track memory becomes full the oldest track is deleted to make room for the latest.

The relation between the own ship track and storage time is shown in the table below.

Own track plot interval and storage time

Plotting interval	Storage time	Plotting interval	Storage time
10 sec	16 hrs 40 min	2 min	200 hrs
30 sec	50 hrs	3 min	300 hrs
1 min	100 hrs	6 min	600 hrs

1. Press the [NAV MENU], [5] key in order to show OWN SHIP PLOT, TARGET PLOT menu.

```
      [OWN SHIP PLOT,
       TARGET PLOT ]
1     [VIDEO PLOTTER 1]
2     OWN SHIP PLOT
      OFF/ON
3     OWN SHIP PLOT INTVL
      10S/30S/1/2/3/6 MIN
4
5     TARGET PLOT
      OFF/ON
6     TARGET PLOT INTVL
      10S/30S/1/2/3/6 MIN
7
8     SMOOTHING
      OFF/1/2/3/4/5/6/7/8/9
```

Own ship plot, target plot menu

2. Press the [2] key several times to select ON at OWN SHIP PLOT (item 2) field.
3. Press the [ENTER] key.

When your ship is at anchor or returning to port you probably will not need to plot (record) the track. In this case, select OFF at step 2.

2.4.2 Recording other ship's track

When your radar has ARPA function, tracks of 10 targets (other ships) can be recorded. Memory capacity for other ship's track is 6,000 points, but this value is divided equally among ten targets, so there are 600 points per target. When a track memory becomes full the oldest track is deleted to make room for the latest.

The relation between the own ship track and other ship's track plotting intervals and storage time is shown in the table below.

Other target plot interval and storage time

Plotting interval	Storage time	Plotting interval	Storage time
10 sec	100 min	2 min	20 hrs
30 sec	5 hrs	3 min	30 hrs
1 min	10 hrs	6 min	60 hrs

1. Press the [NAV MENU], [5] key in order to show OWN SHIP PLOT, TARGET PLOT menu.
2. Press the [5] key several times to select OFF at TARGET PLOT (item 5) field.
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

2.4.3 Smoothing

Even when the vessel is sailing in a straight line the track shown on the display looks irregular. This is due to signal variation of the external navigator. You can compensate for this irregularity with smoothing.

A smoothing factor between 1 and 9 is available. OFF provides no smoothing. In most cares a smoothing setting between 1 and 5 is satisfactory.

1. Press the [NAV MENU], [5] key in order to show OWN SHIP PLOT, TARGET PLOT menu.
2. Press the [8] key several times to select the setting desired.
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

2.4.4 Erasing track

The display may become full of track when, for example, own ship traces the same route several times. You can erase all or a percentage of the track to the clear the display. Further, you can erase the tracks of other ships.

1. Press the [NAV MENU], [9] key in order to show ERASE menu.

	[ERASE]
1	[VIDEO PLOTTER 1]
2	OWN SHIP PLOT 30/50/80/ALL
3	TARGET PLOT 30/50/80/ALL
4	MARKS OFF/AREA/ALL
5	WAYPOINT OFF/ALL
6	NAV LINES OFF/ALL

Erase menu

2. For own ship's track erasing, press the [2] key several times to select OWN SHIP PLOT and the amount of track you wish to erase.

   For example, 30% erases the oldest 30% of the track points stored in the track memory.
3. Press the [ENTER] key.
4. To erase other ship's track, press the [3] key to select TARGET PLOT and amount of track to erase.
5. Press the [ENTER] key.
6. Press the [NAV MENU] key to close the menu.

2.5 Marks, Lines

2.5.1 Entering mark

You can inscribe marks on the display to denote important points, for example, a buoy or a wreck. The mark memory capacity is 6,000 points.(20 types mark and lines).

Selecting method of entry

Marks can be entered by cursor position, L/L or own ship's position.

1. Press the [NAV MENU], [0] key to show VIDEO PLOTTER 2 menu.

	[VIDEO PLOTTER 2]
1	[VIDEO PLOTTER 1]
2	NAV DATA POSN
3	ALIGN + CURSOR OFF/ON
5	MARK ENTRY MODE CURSOR/L/L/OWN SHIP

Video plotter 2 menu

2. Press the [5] key several times to select CURSOR, L/L or OWN SHIP.
3. Press the [ENTER] key.
4. Press the MARK key, and select the mark shape.

CURSOR; enters the mark at the cursor position. Operate the trackball to select the position and then press the [ENTER] key.

L/L; After selecting L/L, the latitude/longitude field appears above ENTER MARK menu by pressing the [MARK] key. Press the numeric key to enter the L/L values which you want to enter the mark, and then press the [ENTER] key.

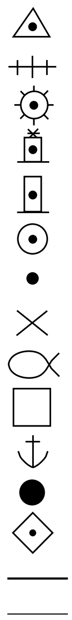
OWN SHIP; The mark is entered at the own ship's position anytime the [ENTER] key is pressed.

Selecting mark

1. Press the [MARK] key to show ENTER MARK menu.

[ENTER MARK]

MARK 01



01.
02.
03.
04.
05.
06.
07.
08.
09.
10.
11.
12.
13.
14.
15.
16. NAV LINE
17. COAST LINE
18. CONTOUR LINE
19. PROHIBITED AREAS
20. CABLE
21. LINE CHANGE
22. MARK CANCEL

Enter mark menu

2. Press the numeric key to select the mark shape desired.
   When selecting "·", for example, press the [0], [7] in order.
3. The mark is entered at the position selected at the previous section anytime the [ENTER] key is pressed.

2.5.2 Entering line

You can enter the line similar to mark.

1. Pres the [MARK] key to show ENTER MARK menu.
2. Press the numeric key to select line shape desired.

   No.14 through 20 are for line. Shapes of line No.16 through 20 are as below.

No./name	16 NAV LINE	17 COAST LINE	18 CONTOUR LINE	19 PROHIBITED AREAS	20 CABLE
Shape	…………………	White line			

3. The line is entered at the position selected on the previous page anytime the [ENTER] key is pressed.

<u>Entering independent lines</u>

When you enter the independent line at the new position, do the following steps. Otherwise, the line becomes one.

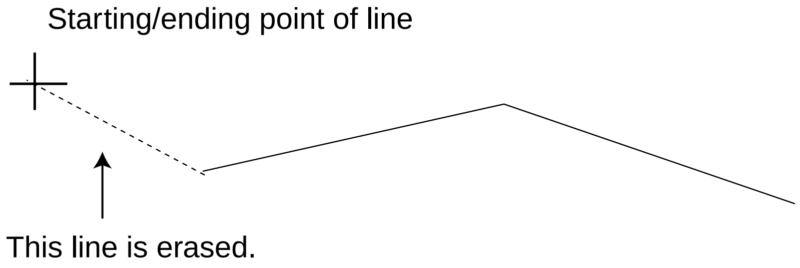
1. Press the [MARK] key to show ENTER MARK menu.
2. Press the [2], [1] key in order to select LINE CHANGE (item 21).
3. Press the [ENTER] key.
4. Press the numeric key for new line shape.
5. Press the [ENTER] key.

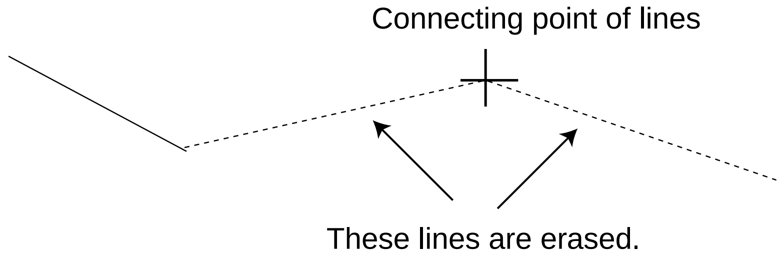
2.6 Erasing Marks, Lines

2.6.1 Erasing individual marks/lines

1. Select CURSOR at MARK ENTRY MODE on VIDEO PLOTTER 2 menu.
2. Press the [MARK] key to show ENTER MARK menu.
3. Press the [2] key twice to select mark cancel (item 22).
4. Operate the trackball to move the cursor on the mark (starting/ending point of line) which you want to erase.
5. Press the [ENTER] key.

When erasing a line, move the cursor on the starting/erasing point of line. To select the connecting point erases two lines connected to it.





2.6.2 Erasing marks/lines on a area

The following procedure erases all marks and lines within a square which is 20% larger than the effective display area.

1. Press the [NAV MENU] [9] key in order to show ERASE menu.

	[ERASE]
1	[VIDEO PLOTTER 1]
2	OWN SHIP PLOT
	30/50/80/ALL
3	TARGET PLOT
	30/50/80/ALL
4	MARKS
	OFF/AREA/ALL
5	WAYPOINT
	OFF/ALL
6	NAV LINES
	OFF/ALL

Erase menu

2. Press the [4] key several times to select AREA at MARKS (item 4) field, and then press the [ENTER] key.

2.6.3 Erasing all marks

To erase all marks and lines in memory, follow the procedures in below.

1. Press the [NAV MENU], [9] key in order to show ERASE menu.

	[ERASE]
1	[VIDEO PLOTTER 1]
2	OWN SHIP PLOT
	30/50/80/ALL
3	TARGET PLOT
	30/50/80/ALL
4	MARKS
	OFF/AREA/ALL
5	WAYPOINT
	OFF/ALL
6	NAV LINES
	OFF/ALL

Erase menu

2. Press the [4] key twice to select ALL at MARKS (item 4) field.
3. Press the [ENTER] key.

2.7 Waypoints

2.7.1 Entering waypoints

In navigation terminology, a particular location is known as a “waypoint,” whether it be a starting point, a destination point or an intermediate on a voyage.

This unit can store 97 waypoints, numbered 01 to 97. Waypoints may be entered by the cursor, by manual input of latitude and longitude, or own ship’s position.

Entering waypoints by the cursor

1. Press the [NAV MENU], [4] key in order to show ENTER WPT, NAV LINE menu.

```
      [ENTER WPT,
      NAV LINE]
1        [VIDEO PLOTTER 1]
2        [ENTER WPT]
3        [WPT LIST]
4
5        [ENTER NAV LINE]
6        [NAV LINE LIST]
```

Enter wpt, nav line menu

2. Press the [2] key to show ENTER WPT menu.
3. Press the [3] key several times to select CURSOR at WPT ENTER MODE (item 3) field, and then press the [ENTER] key.
4. Operate the trackball to move the cursor to the position which you wish to enter.
5. Press the [2] key to select WPT NO.
6. Press the numeric key to select the desired number for the waypoint in two digits.
7. Press the [ENTER] key.
   The position selected is memorized as waypoint and L/L values for it appears.
8. For other waypoint entering, repeat step4 through 7.

Entering waypoints by latitude and longitude

1. Press the [NAV MENU], [4], [2] in that order to show ENTER WPT menu.
2. Press [3] key several times to select L/L at WPT ENTER MODE(item 3) field, and the press the [ENTER] key.
3. Press the [2] key to select WPT NO.
4. Press the numeric key to enter the desired number for waypoint in two digits.
5. Enter the values for L/L as below.
   a) Press the numeric key to enter the value for latitude in seven digits, and then press the [ENTER] key. If necessary, press the [2] key to select North or South.

b) Press the [ENTER] key.
c) Press the numeric key to enter the value of longitude in eight digits, and then press the [ENTER] key. If necessary, press the [2] key to select East or West.
d) Press the [ENTER] key.

6. To enter other waypoint, repeat step 4 and 5.

Entering waypoints at own ship's position

1. Press the [NAV MENU], [4], [2] key in that order to show ENTER WPT menu.
2. Press the [3] key to select OWN SHIP POSN at WPT ENTER MODE (item 3) field, and then press [ENTER] key.
3. Press [2] key to select WPT NO.
4. Press the numeric key to enter the desired number for the waypoint in two digits, and then press the [ENTER] key.

   The waypoint is entered at own ship's position.

2.7.2 Waypoint list

The waypoint list stores position data of all registered waypoints. You can display it as follows.

1. Press the [NAV MENU], [4] key in order to show ENTER WPT, NAV LINE menu.

	[ENTER WPT, NAV LINE]
1	[VIDEO PLOTTER 1]
2	[ENTER WPT]
3	[WPT LIST]
4	
5	[ENTER NAV LINE]
6	[NAV LINE LIST]

Enter wpt, nav line menu

2. Press the [3] key to show WPT LIST.

```
            [WPT LIST 1]
1 [ENTER WPT, NAV LINE]
        WPT
        00       340°44.01 N
                 135°24.56 E
        01        34°42.11 N
                 136°31.58 E
        02        33°97.69 N
                 134°64.35 E
        03        **°**.** N
                 ***°**.** E
        04        **°**.** N
                 ***°**.** E
        05        **°**.** N
                 ***°**.** E
        06        **°**.** N
                 ***°**.** E
        07        **°**.** N
                 ***°**.** E

9       ERASE WPT 00
0       [WPT LIST 2]
```

Wpt list menu

The list shows waypoints 01 through 07, the data of not registered number are displayed as asterisks. To show the next page, press the [0] key (Press the [1] key to return to the previous page).

2.7.3 Displaying a waypoint

Internal storage waypoint

1. Press the [NAV MENU], [2] key in order to show WAY POINT menu.
2. Press the [7] key several times to select VIDEO PLOTTER at WPT DATA (item 7) field.
3. Press the [ENTER] key.

	[WAY POINT]
1	[VIDEO PLOTTER 1]
2	WPT
	OFF/ON
3	WPT NO. 00
	00° 00.000 N
	000° 00.000 E
4	
5	
6	
7	WPT DATA
	VIEO PLOTTER/NAVIGATION
8	ARRIVAL ALARM
	OFF/ON 0.00 NM

Way point menu (on selecting video plotter)

4. Press the [2] key several times to select ON at WPT (item 2) field.
5. Press the [ENTER] key.
6. Press the [3] key.
7. Press the numeric key to enter the waypoint no. you want to display in two digits.
8. Press the [ENTER] key. The L/L data and line between own ship and waypoint.
9. Press the [NAV MENU] key to close the menu.

External waypoint

The waypoint from the external navigator can be displayed.

1. Press the [NAV MENU], [2] key to show WAY POINT menu.
2. Press the [7] key several times to select NAVIGATION at WPT DATA (item 7) field.
3. Press the [ENTER] key.

```
           [WAY POINT]

1        [VIDEO PLOTTER 1]
2        WPT
         OFF/ON
3
4        WPT LINE
         OFF/ON
5        WPT NO.
         OFF/ON
6
7        WPT DATA
         VIEO PLOTTER/NAVIGATION
8        ARRIVAL ALARM
         OFF/ON                0.00 NM
```

Way point menu (on selecting navigation)

4. Press the appropriate key to select ON for showing the waypoint, line and waypoint number.
   [2] key: .Showing the waypoint mark
   [4] key: Showing the line between own ship and waypoint
   [5] key: Showing the waypoint number
5. Press the [ENTER] key.
6. Press the [NAV MENU] key to close the menu.

2.8 Navigation Lines

25 navigation lines may be entered, and each line may have up to 30 waypoints. (The total number of waypoints is 97.)

2.8.1 Entering navigation line

Entering new navigation line

1. Press the [NAV MENU], [4] in order to show ENTER WPT, NAV LINE menu.

```
        [ENTER WPT,
        NAV LINE]
1         [VIDEO PLOTTER 1]
2         [ENTER WPT]
3         [WPT LIST]
4
5         [ENTER NAV LINE]
6         [NAV LINE LIST]
```

Enter wpt, nav line menu

2. Press the [5] key to show ENTER NAV LINE menu.

```
           [ENTER NAV LINE]
1         [VIDEO PLOTTER 1]
2         NAV LINE      00
          WPT 01-> 02 ->   ->
                  ->   ->  ->
                  ->   ->  ->
                  ->   ->  ->
8         ADDING WPT          (00 -> 00)
9         DESELECTING WPT(00 -> 00)
```

Enter nav line menu

3. Press the [2] key to select NAV LINE (item 2).
4. Press the numeric key to enter the number (in two digits) for new navigation line, and then press the [ENTER] key.
5. Press the numeric key to enter the number (in two digits) for the waypoint which you want to enter to the navigation line.
6. Press the [ENTER] key.
7. Repeat step 5 to complete the navigation line.
8. Press the [NAV MENU] key to close the menu.

Adding waypoit to navigation lines

To add waypoints to a navigation line;

1. Press the [NAV MENU], [4], [5] key in that order to show ENTER NAV LINE menu.
2. Press the [2] key.
3. Press the numeric key to enter the number (in two digits) for the navigation line which you want to add the waypoint, and then press the [ENTER] key.
   The cursor moves to the end of the navigation line contents.
4. Press the numeric key to enter the number (in two digit) for the waypoint which you want to add.
5. Press the [ENTER] key.
6. Press the [NAV LINE] key to close the menu.

You can add waypoints to a navigation line by selecting ADDING (item 8) on ENTER NAV LINE menu.

Removing waypoints from navigation lines

To remove waypoints from a navigation line, follow the procedure in below.

1. Press the [NAV MENU], [4], [5] key in that order to show ENTER NAV LINE menu.
2. Press the [2] key.
3. Press the numeric key to enter the number (in digits) for the navigation line which you want to remove the waypoint, and then press the [ENTER] key.
4. Press the [9] key to select DESELECTING (item 9).
5. Press the numeric key to enter the number (in digits) for the waypoint which you want to remove.
6. Press the [ENTER] key.
   If there are same-numbered waypoints in a navigation line, the one near the end may be erased.

2.8.2 Navigation line list

The navigation line list, which shows all navigation lines registered, can be displayed by pressing the [NAV MENU], [4], [6] key in that order.

2.8.3 Deleting navigation lines

Deleting individual navigation lines

1. Press the [NAV MENU], [4], [6], [9] key in that order to select ERASE NAV LINE (item 9) on NAV LINE LIST menu.
2. Press the numeric key to enter the number (in two digits) for the navigation line which you want to delete.

   Note: The navigation line in use cannot be deleted.
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

Deleting all navigation lines

1. Press the [NAV MENU], [9] key in order to select ERASE NAV LINE (item 9) on ERASE menu.
2. Press the [6] key twice to select ALL at NAV LINE (item 6) field.
3. Press the [ENTER] key.
4. Press the [NAV MENU] key to close the menu.

2.8.4 Setting up the navigation lines

Navigation lines can be set up as follows:

1. Press the [NAV MENU], [3] key to show NAV LINE menu.
2. Press the [7] key several times to select VIDEO PLOTTER at NAV LINE DATA (item 7) field.
3. Press the [ENTER] key.

```
              [NAV LINE]

1       [VIDEO PLOTTER 1]
2       NAV LINE
3
4       NAV WIDTH
        OFF/ON        0.00NM
5       WPT NO.
        OFF/ON
6       WPT
        (**)->@->(**)
        (**)->(**)
7       NAV LINE DATA
        VIEO PLOTTER/NAVIGATION
8       ARRIVAL ALARM
        OFF/ON        0.00 NM
9       TURNING LINE
        OFF/ON REVISED
```

Nav line menu (Video plotter mode)

4. Press the [4] key several times to select ON at NAV WIDTH (item 4) field.
5. Press the [ENTER] key.
6. Press the numeric key to enter the width for navigation line.
   Dashed lines appears at both sides of the navigation line. If unnecessary, select OFF at step 4.
7. Press the [ENTER] key.
8. Press the [5] key several times to select ON at WPT NO. (item 5) field.
   Waypoint No. and marks appears on the navigation line.
9. Press the [ENTER] key.
10. Press the [6] key and then enter the waypoint number in the following case;
    · Enter the number of which you are going to the waypoint
    · Skip the waypoint which you are going to, and set the next waypoint as destination

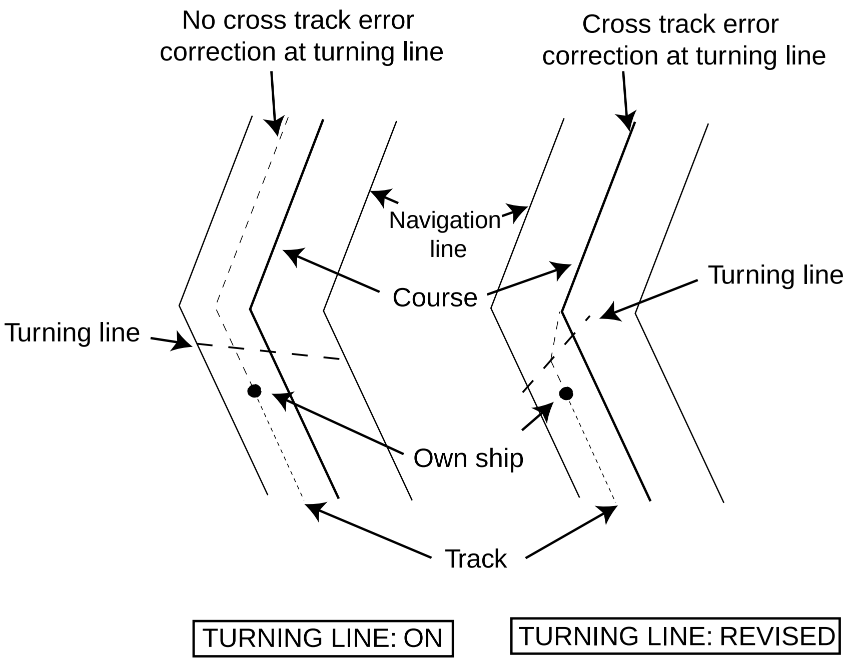
11. Press the [ENTER] key.

    For example, when you select the navigation line which has waypoints 11→12→13→14, and you are going to waypoint 12, the display shows “(11) →@→12→(13) →(14)”. “@” means the own ship’s position.
12. If you want to be alerted when own ship nears a waypoint, press the [8] key several times to select ON at ARRIVAL ALARM (item 8) field.
13. Press the [ENTER] key.
14. Press the numeric key t enter the arrival alarm range, and then press the [ENTER] key.
15. Press the [9] key several times to set TURNING LINE (item 9).

    OFF: Turns turning lines off.

    ON: Use this setting when vessel is not to correct cross track error to return to course set, after arriving at turning line location.

    REVISED: Use this setting when vessel is to return to course set after correcting cross track error, after arriving at turning line location.



16. Press the [ENTER] key.
17. Press the [NAV MENU] key to close the menu.

Note: The turning line function requires the correct settings of TURN RATE and SPEED RATE (on SHIP INFORMATION menu). For details, ask your dealer.

2.8.5 Displaying navigation lines

Internal navigation lines

Navigation lines made at the previous section can be displayed as follow.

1. Press the [NAV MENU], [3] key to show NAV LINE menu.
2. Press the [7] key several times to select VIDEO PLOTTER at NAVLINE DATA (item 7) field.
3. Press the [2] key twice to select ON at NAV LINE (item 2) field.
4. Press the [ENTER] key.
5. Press the [3] key to select NAV LINE NO. (item 3).
6. Press the numeric key to enter the number for the navigation line which you want to display.
7. Press the [6] key, and then enter the waypoint number which you go to.
8. Press the [ENTER] key.

External navigation line

The navigation line from the external navigator can be displayed.

1. Press the [NAV MENU], [3] key to show NAV LINE menu.
2. Press the [7] key several times to select NAVIGATION at NAVLINE DATA (item 7) field.

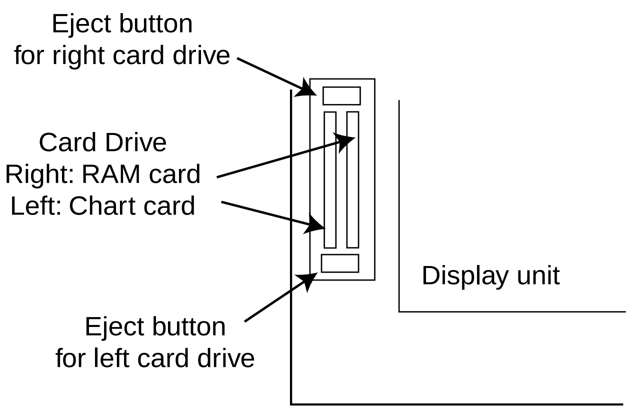
2.9 Recording and Replaying Data

2.9.1 Formatting memory (RAM) card

Before you can use a memory (RAM) card with the RP-25, the card must be formatted. Formatting prepares the recording surface of the card for use with the system, and deletes all data recorded in the memory card.

Note: You can format cards you've used before, however, in which case all prior information on them is erased.

1. Insert the memory card in the right side card slot.



Card slot

2. Pres the [NAV MENU] , [6] key in order to select CARD.
3. Press the [6] key to select RECORD
4. Press the [ENTER] key to show RECORD CARD menu.

[RECOARD CARD]	
1	[VIDEO PLOTTER 1]
2	OWN SHIP PLOT FILE
3	TARGET PLOT FILE
4	MARK FILE
0	FORMAT NO/YES

Record card menu

5. Press the [0] key twice to select YES at FORMAT (item 0) field.
6. Press the [ENTER] key.

   When the formatting finishes, “COMPLETED” appears at the bottom of the menu.

2.9.2 Recording data

When the track memory becomes full, the oldest track is erased to make room for the latest. Further, when the mark memory becomes full you cannot enter another mark unless you erase a mark. Thus you should save important data to a memory card.

1. Insert a formatted memory card in the right hand card slot.
2. Press the [NAV MENU] key.
3. Press the [6] key several times to select RECOARD at CARD (item 6) field.
4. Press the [ENTER] key.
5. Press the appropriate key depending on the recorded item.

   Own ship’s track: [2] key

   Target track: [3] key

   Marks: [4] key
6. Press the numeric key to enter the file title (max. seven digits).
7. Press the [ENTER] key.

   When the recording finishes, “COMPLETED” appears at the bottom of the menu.

2.9.3 Replaying data

1. Insert the memory card which has data in the right hand card slot.
2. Press the [NAV MENU] key.
3. Press the [6] key several times to select REPLAY.
4. Press the [ENTER] key.

[REPLAY CARD 1]	
1	[VIDEO PLOTTER 1]
2	FILE
3	FILE
4	FILE
5	FILE
6	FILE
7	FILE
8	FILE
9	FILE

Replay card menu

5. Press the numeric key to enter the number for the file which you wish to replay.

   When the data replaying finishes, “COMPLETE” appears at the bottom of the menu.

   The next page can be displayed by pressing the [0] key.

3. MAINTENANCE (FOR TECHNICIANS)

3.1 Initial Settings

An item on the DISPLAY SELECT menu can be deleted thru the INITIAL SETTING menu. If it is necessary to change the settings, follow the procedure below.

1. Turn the radar off.
2. Dismount the SPU Board from the display unit, and then on #4 of DIP switch S on the board.
3. Remount the SPU board to the display unit.
4. Turn the radar on.
5. Press the [NAV MENU], [0], [0] key in order to show VIDEO PLOTTER INITIAL SETTING menu.

```
        [VIDEO PLOTTER
        INITIAL SETTING]

1       [VIDEO PLOTTER 2]
2       SYMBOL
        OFF/ON
3       COAST LINE
        OFF/ON
4       LAND DENSITY
        OFF/ON
5       PLACE NAME
        OFF/ON
6       MARK
        OFF/ON
7       OWN SHIP PLOT
        OFF/ON
8       TARGET PLOT
        OFF/ON
9       CONTOUR LINE
        OFF/ON
0       GRID
        OFF/ON
```

Video plotter initial setting menu

6. Press the appropriate numeric key to select turning on or off item.
7. Press the [ENTER] key.
8. Repeat step 6 and 7 to set the other items.
9. Turn the radar off, and then turn off #4 of DIP switch S1 on the SPU Board arranged at step 2.

3.2 Replacement of Battery on RP Board

The RP Board is mounted in the display unit of the FR-2805 series radars. For general maintenance and trouble shooting, therefore, refer to radar's operator's manual. The only maintenance required for the RP-25 is the replacement of the battery on the RP-Board.

A lithium battery on the RP Board preserves RP-25 data when power is off. The life of the battery is about three years. When the radar self-test shows low battery voltage, have the battery replaced at your earliest convenience, so that important data will not be lost.

Before replacing the battery, save data to a RAM card, if necessary.

⚠ DANGER

Do not open the equipment.

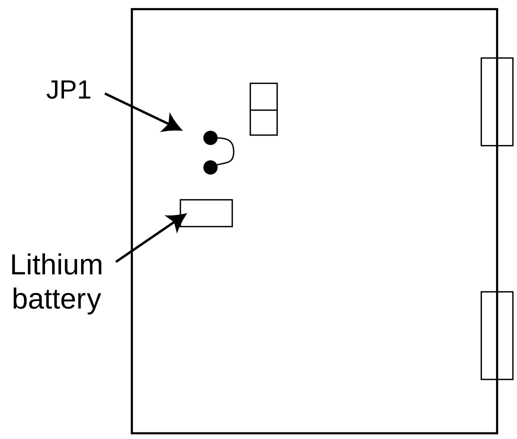
High voltage which can shock, burn or cause death exists inside the equipment. Do not work inside the equipment unless familiar with electrical circuits.

Turn off the power at the mains switchboard before begining the installation.
Post a sign near the switch to indicate it should not be turned on while the equipment is being installed.

Fire, electrical shock or serious injury can result if the power is left on or is applied while the equipment is being installed.

⚠ CAUTION

Be sure the battery is inserted "plus" side up to prevent damage to card and equipment.



Name	Type	Code No.
Lithium battery	ER3S	000-127-759

1. Turn the radar off, and then dismount the RP Board from the display unit. Lay the board on insulating materials.
2. Cut jumper wire JP1. This cuts off the battery circuit.
3. Replace battery.
4. Attach jumper wire JP1.
5. Remount the RP Board to the display unit.

MENU TREE

[RADAR MAP display]

NAV MENU key

↓

NAV INFORMATION 1 menu

- 1 [RADAR MAP]
  - 1 [NAV INFORMATION 1]
  - 2 MAP — OFF/ON
  - 3 NAV DATA POSN
  - 4 ALIGN + CURSOR — OFF/ON
  - 5 MARK ENTRY MODE — CURSOR/L/L/OWN SHIP
  - 6 ERASE MARK — OFF/AREA/ALL
- 2 SELECT NAVAID — GPS+LC/DEAD RECKONING
- 3 OWN SHIP POSN — OFF/L/L
- 4 POSN — 00 00.000 N/S 000 00.000 E/W
- 5 + CURSOR DATA — OFF/L/L
- 6 WPT DATA — OFF/REL/TRU
- 7 [WAYPOINT]
  - 1 [NAV INFORMATION 1]
  - 2 WPT — OFF/ON
  - 4 WPT NO.
  - 7 WPT DATA — VIDEO PLOTTER/NAVIGATION
  - 8 ARRIVAL ALARM — OFF/ON 0.00 NM
- 8 [NAV LINE]
  - 1 [NAV INFORMATION 1]
  - 2 NAV LINE — OFF/ON
  - 3
  - 4 NAV WIDTH — OFF/ON 0.00 NM
  - 5 WPT NO. — OFF/ON
  - 6 WPT — (**)->@->(**)->(**)
  - 7 NAV LINE DATA — VIDEO PLOTTER/NAVIGATION
  - 8 ARRIVAL ALARM — OFF/ON
  - 9 TURNING LINE — OFF/ON/REVISED
- 9 WIND DATA — OFF/ON
- 0 [NAV INFORMATION 2]
  - 1 [NAV INFORMATION 1]
  - 2 WIND GRAPH — OFF/ON
  - 3 WIND UNIT — m/s/KT
  - 4 CURRENT DATA — OFF/ON
  - 5 CURRENT GRAPH — OFF/ON
  - 6 DEPTH DATA — OFF/ON
  - 7 DEPTH GRAPH — OFF/ON
  - 8 DEPTH SCALE — 10/20/50/100/200/500
  - 9 DEPTH UNIT — m/FT/FA
  - 0 [NAV INFORMATION 3]
    - 1 [NAV INFORMATION 2]
    - 2 WATER TEMP — OFF/ON
    - 3 DATE — OFF/UTC/LOCAL
    - 4 USED WPL — NAV LINE/WP

[VIDEO PLOTTER screen]

NAV MENU key

VIDEO PLOTTER 1 menu

- 1 [NAV INFORMATION]
  - 1 [VIDEO PLOTTER 1]
  - 2 SELECT NAVAID GPS+LC/DEAD RECKONING
  - 3 OWN SHIP POSN OFF/L/L
  - 4 OWN SHIP 00 00.000 N/S 000 00.000 E/W
  - 5 + CURSOR DATA OFF/L/L
  - 6 WPT DATA OFF/REL/TRU
  - 7 [WAY POINT] (Same as 2 [WAY POINT])
  - 8 [NAV LINE] (Same as 3 [NAV LINE])
  - 9 WIND DATA OFF/ON
  - 0 [NAV INFORMATION 2]
    - 1 [NAV INFORMATION 1]
    - 2 WIND GRAPH OFF/ON
    - 3 WIND UNIT m/s/kt
    - 4 CURRENT DATA OFF/ON
    - 5 CURRENT GRAPH OFF/ON
    - 6 DEPTH DATA OFF/ON
    - 7 DEPTH GRAPH OFF/ON
    - 8 DEPTH SCALE 10/20/50/100/200/500
    - 9 DEPTH UNIT m/ft/FA
    - 0 [NAV INFORMATION 3]
      - 1 [NAV INFORMATION 2]
      - 2 WATER TEMP OFF/ON
      - 3 DATE OFF/UTC/LOCAL
      - 4 USED WPL NAV LINE/WP
- 2 [WAY POINT]
  - 1 [VIDEO PLOTTER 1]
  - 2 WPT OFF/ON
  - 3 WPT NO. OFF/ON
  - 7 WPT DATA VIDEO PLOTTER/NAVIGATION
  - 8 ARRIVAL ALARM OFF/ON 0.00NM
- 3 [NAV LINE]
  - 1 [VIDEO PLOTTER 1]
  - 2 NAV LINE OFF/ON
  - 3
  - 4 NAV WIDTH OFF/ON 0.00 NM
  - 5 WPT NO. OFF/ON
  - 6 WPT (**)->@->(**)
  - 7 NAV LINE DATA VIDEO PLOTTER/NAVIGATION
  - 8 TURNING LINE OFF/ON/REVISED
- 4 [ENTER WPT, NAV LINE]
  - 1 [VIDEO PLOTTER 1]
  - 2 [ENTER WPT]
    - 1 [ENTER WPT, NAV LINE]
    - 2 WPT NO. 0 00.000 N/S 0 00.000 E/W
    - 3 WPT ENTER MODE CURSOR/L/L/OWN SHIP POSN
  - 3 [WAY POINT LIST]
    - 1 [ENTER WPT, NAV LINE]
    - 2 WAY POINT LIST
    - 9 ERASE WPT
  - 5 [ENTER NAV LINE]
    - 1 [ENTER WPT, NAV LINE]
    - 2 NAV LINE
    - 8 ADDING WPT
    - 9 DESELECTING WPT
  - 6 [NAV LINE LIST]
    - 1 [ENTER WPT, NAV LINE]
    - 9 ERASE NEW LINE
- 5 [OWN SHIP, TARGET PLOT]
  - 1 [VIDEO PLOTTER 1]
  - 2 OWN SHIP PLOT OFF/ON
  - 3 OWN SHIP PLOT INTVL 10S/30S/1M/2M/3M/6M
  - 5 TARGET PLOT OFF/ON
  - 6 TARGET PLOT INTVL 10S/30S/1M/2M/3M/6M
  - 8 SMOOTHING OFF/1/2/3/4/5/6/7/8/9
- 6 CARD REPLAY/RECOARD
- 8 [DISPLAY SELECT]
  - 1 [VIDEO PLOTTER 1]
  - 2 SYMBOL OFF/ON
  - 3 COAST LINE OFF/ON
  - 4 LAND DENSITY OFF/ON
  - 5 PLACE NAME OFF/ON
  - 6 MARK OFF/ON
  - 7 OWN SHIP PLOT OFF/ON
  - 8 TARGET PLOT OFF/ON
  - 9 CONTOUR LINE OFF/ON
  - 0 GRID OFF/ON
- 9 [ERASE]
  - 1 [VIDEO PLOTTER 1]
  - 2 OWN SHIP PLOT 30/50/80/ALL
  - 3 TARGET PLOT 30/50/80/ALL
  - 4 MARKS OFF/ON
  - 5 WAY POINT OFF/ON
  - 6 NAV LINE OFF/ON
- 0 [VIDEO PLOTTER 2]
  - 1 [VIDEO PLOTTER 1]
  - 2 NAV DATA POSN
  - 3 ALIGN + CURSOR OFF/ON
  - 5 MARK ENTER MODE CURSOR/L/L/OWN SHIP POSN

LATITUDE ERROR TABLE (ON 96 NM RANGE)

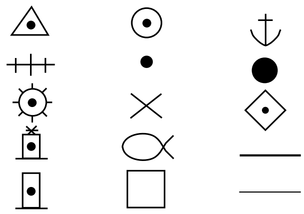
(nm)

EBL / LAT	5°	10°	15°	20°	25°	30°	35°	40°	45°
70°	0.21980213	0.43290201	0.632803	0.8134132	0.96923215	1.09551918	1.1884382	1.24517456	1.26402037
65°	0.21229339	0.41810678	0.61115946	0.78556318	0.93600295	1.05790007	1.14755221	1.20224625	1.22034042
60	0.20316898	0.40012949	0.58486463	0.75173456	0.89565021	1.0122297	1.09793265	1.15016811	1.16737294
55°	0.19249832	0.37910698	0.55411863	0.71218478	0.84848102	0.95885565	1.03998717	1.08933651	1.10552105
50°	0.18036264	0.35519924	0.51915545	0.66721485	0.79485438	0.89818413	0.97406698	1.02021439	1.03525547
45°	0.16685429	0.32858822	0.48024119	0.61716701	0.73517843	0.83067689	0.90076355	0.94332783	0.95711098
40°	0.15207608	0.29947644	0.437672	0.56242216	0.66990732	0.7568477	0.82060477	0.85926197	0.87168229
35°	0.13614047	0.26808546	0.39177186	0.50339693	0.59953781	0.67725844	0.73420069	0.76865661	0.77961957
30°	0.11916876	0.2346542	0.3428901	0.44054055	0.52460545	0.59251483	0.6422089	0.67220131	0.68162348
25°	0.1012901	0.19943707	0.29139874	0.37433139	0.44568053	0.50326182	0.54532952	0.57063015	0.57843983
20°	0.08264056	0.16270211	0.23768966	0.30527334	0.36336372	0.41017869	0.44429984	0.46471615	0.47085389
15°	0.06336208	0.12472888	0.18217162	0.23389198	0.27828148	0.31397386	0.33988878	0.35526538	0.35968447
10°	0.04360137	0.0858064	0.12526714	0.16073056	0.19108136	0.21537949	0.23289096	0.24311083	0.24577764
5°	0.02350883	0.04623087	0.0674093	0.08634588	0.10242699	0.11514595	0.1241207	0.12910605	0.13000029
0°	0.00323737	0.0063035	0.00903844	0.01130406	0.01299309	0.01403609	0.0144058	0.0141187	0.01323356

(nm)

EBL / LAT	50°	55°	60°	65°	70°	75°	80°	85°	90°
70°	1.24442563	1.18701379	1.09356117	0.96694117	0.81103484	0.63061092	0.43117887	0.21881975	7.429E-10
65°	1.20131324	1.14577786	1.05546143	0.93315023	0.78260251	0.60843159	0.41596331	0.21107193	7.165E-10
60	1.14905813	1.09582188	1.00932899	0.89225746	0.74821409	0.58162173	0.397582	0.20171772	6.8466E-10
55°	1.08805799	1.03752602	0.95551494	0.84457408	0.70813132	0.55038538	0.37617487	0.19082831	6.476E-10
50°	1.0187708	0.97133397	0.89442885	0.79046297	0.66265924	0.51496026	0.35190481	0.17848659	6.0561E-10
45°	0.94174265	0.89774948	0.82653562	0.73033596	0.61214392	0.47561599	0.32495654	0.16478648	5.5903E-10
40°	0.85754099	0.81733258	0.75235195	0.66465066	0.55696981	0.43265198	0.29553516	0.14983224	5.0817E-10
35°	0.76681293	0.73069528	0.67244242	0.59390696	0.49755683	0.38639524	0.26386458	0.13373769	4.5345E-10
30°	0.67024897	0.63849695	0.58741521	0.51864327	0.43435714	0.33719779	0.23018583	0.11662531	3.9527E-10
25°	0.568584	0.54143927	0.49791741	0.43943239	0.36785173	0.28543407	0.19475522	0.09862535	3.341E-10
20°	0.46259176	0.44026091	0.40463016	0.35687717	0.29854675	0.23149802	0.15784242	0.07987479	2.704E-10
15°	0.35307892	0.3357319	0.30826343	0.2716059	0.22696965	0.17580013	0.11972833	0.06051633	2.0459E-10
10°	0.2487894	0.22864776	0.20955062	0.18426754	0.15366517	0.1187643	0.08070304	0.0406973	1.3728E-10
5°	0.12684572	0.11982348	0.10924302	0.09552679	0.0791912	0.04106355	0.04106355	0.02056855	6.8923E-11
0°	0.01184713	0.01008727	0.008104	0.00605903	0.00411455	0.00111154	0.00111154	0.00028325	0

SPECIFICATIONS

	Radar Plotter	Radar Map
Display	Radar Display, Video Plotter display, Radar/Video Plotter display	Radar display only
Display Mode	HU*, TM, CU, NU, CG (No chart available in HU and CG mode) *Not available in G-type.	HU, TM, CU, NU, CG
Display Range	0.125/0.25/0.5/0.75/1/1.5/2/3/4/6/8/12/16/24/32/48/72/96*/120* *FR/FAR-2825 only	
Projection	Mercator	Ichnography
Useable Range	80˚ latitude or below	
Electronic Chart Card	Land features filled	-
Track Capacity	Own ship: 6,000 points Other ship: 6,000 points Own ship plot interval: OFF/10sec/30sec/1min/2min/3min/6min	-
Marks	Mark capacity: 6,000 points	Mark capacity: 1,500 points
	 Nav Line Coast line Contour line Prohibited line Cable	
Course Line	Internal setting or external input from navaid.	-
Data Display (requires external sensors)	· Own ship's latitude and longitude position · Cursor latitude and longitude position · Range/bearing, estimated time to arrive to waypoint · Range and bearing from origin mark to cursor · Depth · Water temperature	-
Alarm	Arrival alarm (audible)	